

Abstract Submitted  
for the APR09 Meeting of  
The American Physical Society

**Simulating Background Radiation to Establish NuSTAR Detection Limits**<sup>1</sup> SEDONA PRICE<sup>2</sup>, Caltech, NUSTAR TEAM — The NuSTAR (Nuclear Spectroscopic Telescope Array) project will launch a telescope array into orbit that will image X-rays of energies from 5 keV to 80 keV. To determine if the instrument meets the required sensitivity, we need to establish the lower bound on the flux into the detectors necessary to observe an object. To establish the minimum acceptable flux, analysis must be performed on a model of the background radiation. A model of the detector was made, accounting for the detector dimensions and telescope optics and data from prospective satellite orbits. Monte Carlo methods were employed to generate random background radiation events weighted according to the aperture and energy spectra data and the detector model, forming the background radiation simulation. The point spread function (PSF) for the NuSTAR telescope was used to model what would be detected from a point source. The model data was combined and the signal to noise ratio was inspected with variations in the sources modelled to establish the detection lower bound. The background simulation can be redone as the apparatus design changes, allowing for further analysis against source models.

<sup>1</sup>This material is based upon work supported by NASA Award Number NNG06WC20G.

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Date submitted: 17 Feb 2009

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